

### **Amendment to the Abstract**

A simulator comprising computer-aided design programs for simulating a shift control algorithm stored in an ECU of an automatic transmission having hydraulic clutches. In the simulator, a simplified hydraulic ~~describing the behavior of the clutch is designed and is incorporated with a model~~ describes ~~describing~~ the entire system so as to design a third model based on which simulation is conducted. With this, by using such a simplified model, it becomes possible to decrease simulation time to 4 sec., enabling to simulation in a time close to an actual shift of approximately 1.5 sec. Moreover, the durability of transmission is tested by repeating the simulation. When the occurrence of undesirable shift phenomenon is forecast in the simulation, the shift control algorithm is corrected until the phenomenon disappears in the next simulation. With this, the manufacturing of a test transmission and a preliminary test are no longer needed, thereby further improving the efficiency and costs of transmission development.